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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,109	03/12/2004	Christina Woody Mercier	112056-0427	8926
24267 7590 03/13/2008 CESARI AND MCKENNA, LLP 88 BLACK FALCON AVENUE BOSTON, MA 02210				
EXAMINER				
WASSUM, LUKE S				
ART UNIT		PAPER NUMBER		
2167				
MAIL DATE		DELIVERY MODE		
03/13/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/800,109

Applicant(s)

MERCIER ET AL.

Examiner

Luke S. Wassum

Art Unit

2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-46 is/are pending in the application.
- 4a) Of the above claim(s) 23-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Amendment

1. The Applicants' amendment, filed 19 December 2007, has been received, entered into the record, and considered.

2. As a result of the amendment, claims 23, 31, 39 and 40 have been amended. Claims 1-22 have been previously canceled. Claims 23-46 are now pending in the application.

3. The examiner acknowledges the Applicants' request for interview, presented on page 11 of the Applicants' remarks.

The examiner attempted to contact the attorney of record to schedule the requested interview. A message was left on 20 February 2008, but was not returned.

The Invention

4. The Applicants' specification discloses an apparatus providing coherent data copying operations where data replication is controlled by a source storage controller directly to a destination controller and managed by a remote application.

Priority

5. The examiner acknowledges the Applicants' claim to domestic priority under 35 U.S.C. § 120, as a continuation of application 09/375,819, filed 16 August 1999.

Election/Restrictions

6. As a result of the Applicants' amendment, independent claims 23, 31, 39 and 40 (and their dependent claims) are now directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The originally filed claims were drawn to an apparatus for providing coherent data copying operations where data replication is controlled by a source storage controller directly to a destination controller and managed by a remote application [language taken from Applicants' abstract].

Newly amended independent claims 23, 31, 39 and 40 are now drawn to an apparatus wherein a request to copy data blocks includes provisions whereby write requests for data blocks not already copied in the snapshot are buffered in a first in first out (FIFO) queue until the snapshot is completed, at which time the write commands are read from the top of the FIFO queue and executed.

Since the Applicants have received an action on the merits for the originally presented invention, the invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, **claims 23-45 are withdrawn from consideration as being directed to a non-elected invention.** See 37 CFR §§ 1.142(b) and 1.145, as well as MPEP § 821.03.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ohran et al.** (U.S. Patent 5,649,152) in view of **Meyer** (U.S. Patent 5,867,733).

11. Regarding claim 46, **Ohran et al.** teaches a method substantially as claimed, comprising:

- a) receiving a write request, wherein the write request has a range of data bytes to modify (see disclosure that all write commands are intercepted, col. 4, lines 25-48);
- b) determining the range of bytes is within a snapshot range, wherein a snapshot is a process of copying data to a new location before the data is modified by a write operation (see disclosure of the desire to create a static image of a mass storage system, col. 4, lines 14-19; see also col. 1, lines 20-26; see also col. 2, lines 49-51);
- c) determining the range of bytes has not been snapshotted (see disclosure that copies of blocks on the mass storage system are placed in a preservation memory whenever they are going to be changed by a write operation, unless an entry for that block is already in the preservation memory, col. 2, lines 55-58);
- d) in response to determining the range of bytes has not been snapshotted, copying the range of bytes from a source volume to a snapshot volume (see disclosure that copies of blocks on the mass storage system are placed in a preservation memory [snapshot volume] whenever they are going to be changed by a write operation, unless an entry for that block is already in the preservation memory, col. 2, lines 55-58; see also col. 5, lines 50-53);

- e) updating a volume snapshot map, wherein the snapshot map determines which blocks are located in the snapshot volume, in response to copying the range of bytes (see disclosure that block association memory [the snapshot map] is used to associate blocks stored in the preservation memory [the snapshot volume] with the unique addresses of blocks on mass storage system [the source volume], col. 4, lines 56-62; see also disclosure that the block association memory [snapshot map] is updated as necessary when data is placed within the preservation memory [snapshot volume], col. 5, lines 50-53);
- f) modifying the range of bytes of data from the write request, in response to copying the range of bytes (see disclosure that the data to be written by the mass storage write operation is written to the location on the mass storage system specified by the mass storage write address, col. 5, lines 61-65); and
- g) copying the range of bytes from the source volume to a target volume using the volume snapshot map and data stored in the snapshot volume (see disclosure of the creation of a backup copy/static image of the mass storage system, col. 1, lines 20-30; see also col. 2, lines 21-30 and 49-51; see also col. 4, lines 14-19; see also disclosure that during a read of the virtual device, the preservation memory [snapshot volume] is first checked to see if it

contains a copy of the block from the specified location, and if so, that copy is returned, and if not, the block is read from the mass storage system, col. 2, lines 58-64).

Ohran et al. does not explicitly teach a method wherein the copying is performed without having a file server in the path.

Meyer, however, teaches a method of copying data wherein the copying is performed without having a file server in the path (see disclosure that the data storage controller transfers data directly between the first and second data storage devices under control of the data storage device controller, without employing the memory array and computer bus, said transferring constituting copying, rendering the claimed copy logic inherent, col. 4, lines 28-44; see also col. 2, lines 7-19).

It would have been obvious to one of ordinary skill in the art at the time of the invention to transfer data directly from one device driver to another without having a file system in the path, since this would allow for a direct movement of blocks of data between storage devices without processor intervention, and without using I/O or processor bus bandwidth (see col. 4, lines 45-57).

Response to Arguments

12. Applicant's arguments filed 19 December 2007 have been fully considered but they have been rendered moot in view of the withdrawal from consideration of claims 23-45.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke S. Wassum whose telephone number is 571-272-4119. The examiner can normally be reached on Monday-Friday 8:30-5:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

In addition, INFORMAL or DRAFT communications may be faxed directly to the examiner at 571-273-4119, or sent via email at luke.wassum@uspto.gov, **with a previous written authorization in accordance with the provisions of MPEP § 502.03. Such communications must be clearly marked as INFORMAL, DRAFT or UNOFFICIAL.**

Customer Service for Tech Center 2100 can be reached during regular business hours at (571) 272-2100, or fax (571) 273-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Luke S. Wassum", with a long horizontal flourish extending to the right.

/Luke S. Wassum/
Primary Examiner, Art Unit 2167

lsw
5 March 2008